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Correlations among Knowledge Outsourcing and Organizational Culture, Organizational Performance in Public Sectors

Hong-Cheng LIU[1], Jie-Shin LIN[2]

Abstract

The trend of domestic and international central governments promoting public services reveal that the governmental reform is developing towards the establishment of entrepreneurial government and privatization, the applications of civil resources, and the utilization of Knowledge Outsourcing as the promotion direction and strategy. Aiming at the directors and administrators of bureaus and departments in Tainan City Government, total 260 copies of questionnaires are distributed, and 146 copies are effectively responded, with the effective response rate 56%. The research results conclude that: Knowledge Outsourcing presents significantly positive correlations with Organizational Culture; Organizational Culture shows remarkably positive correlations with Organizational Performance; Knowledge Outsourcing reveals notably positive correlations with Organizational Performance, and Organizational Culture appears mediating effects on the correlations between Knowledge Outsourcing and Organizational Performance.

Keywords: public sectors, Knowledge Outsourcing, Organizational Culture, Organizational Performance, non-profit organizations, administrative reform

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Introduction

The US public management scholars indicated the changing role of governments in western countries started from 1980s, when research on public administration also presented paradigm shift, from traditional public administration model, which dominated about the complete 20th century, to new public management, and bureaucracy under the government systems were being replaced by economic theories and marketing principles (Adan *et al.,* 2011). In regard to the practical promotion, the total goal was to introduce the spirit of business management, establish an innovative, flexible, and adaptable government, and request the government to be lean, nimble, and minimum. With the combination of civil and governmental resources, the central and the locals coordinately promoted to make the efforts. In other words, it aimed to establish the government with innovative spirits of an enterprise. Getting out of the past action of administrative reform, which focused on downscaling personnel and organization, such a government stressed on customer- and performance-oriented service management systems, reconstructed organizational culture as the competition and innovation, returned the role of government to leadership, rather than paddling, and applied civil resources with the commonly utilized instrument, Knowledge Outsourcing, as the promotion orientation and strategy.

With economic globalization and innovative globalization, Knowledge Outsourcing has implemented the broad connection and cooperation of professional knowledge in various links, and enterprises in developed countries have utilized the large professional talents and R&D power in developing countries for establishing more global Knowledge Outsourcing centers in the world. Accordingly, outsourcing enters the transition to economy era with the features of Knowledge Outsourcing (KPO). Knowledge Outsourcing (KPO) refers to the work specialization of an enterprise in a country subcontracting the knowledge innovation and R&D links in the businesses to other countries or private enterprises and groups. Different from general outsourcing, Knowledge Outsourcing is the key link and could create higher value with design, R&D, and human resource management and influence and condition the core competence and organizational culture of an enterprise. In this case, Knowledge Outsourcing is generally related to the high-end high technology of value chain in the industrial process and high value-added outsourcing businesses. From the aspect of global talent allocation, Knowledge Outsourcing in developed countries has been distributed according to the current professional talents in various countries or regions.

Literature review and hypothesis

Knowledge Outsourcing

Chen, Schafheutle and Noyce (2009) mentioned that the broad application of information technology in developed countries in 1990s hastened the transformation of technology industry and structuring; more and more market demands changed from hardware-based development to software-based knowledge-based services. Moreover, the global activities of multinational corporations getting complicated, changing technology innovation, rapidly developing virtual network, and decreasing marketing information costs largely encouraged the rapid development of Knowledge Outsourcing (Bhattacharjee, 2013). Kroes & Ghosh (2010) pointed out the essential constraints on Knowledge Outsourcing: (1) Positive correlations between market demands and spillover effects of Knowledge Outsourcing. The key factors in Knowledge Outsourcing not only contained the basic elements of research and development, technology application, and process reengineering but also covered market demands, market size, and structuring; (2) The absorption and learning abilities and the R&D and design capabilities of contractors directly determined the change of outsourcing of multinational corporations and affected the effective division of labor and share of Knowledge Outsourcing; (3) Positive correlations between intellectual property rights protection and outsourcing spillover effects. Outsourcing strategies of enterprises in developed countries relied on the risk of losing technical advantages and the market vision and intellectual property rights protection of the host country; (4) Joint scale and coordination efficiency of industrial clusters. Liou *et al.* (2011) indicated that dominant enterprises, affiliated enterprises, and the relevant supporting enterprises in the Knowledge Outsourcing clusters could coordinately build a platform to support industrial upgrade and sustainable development. Accelerating the knowledge flow and high resource sharing in clusters became the primary success factors in Knowledge Outsourcing (Tayfur, & Taaffe, 2009).

According to the dimensions proposed by Baculinao & Yang (2014), Cost, Talent Resource, Joint, and Market are applied to this study: (1) Cost is a key factor in Knowledge Outsourcing. Although human resource costs in Knowledge Outsourcing is largely higher than general outsourcing, Knowledge Outsourcing allows enterprises in developed countries largely reducing the costs in high-end process of value chain and acquiring higher value-added; (2) Market demands are an important reference of Knowledge Outsourcing for enterprises in developed countries. For multinational corporations and the independent suppliers, higher market demands reveal seek for more appropriate external purchasers through technology and knowledge control and production scale expansion; (3) Requirements of the number and quality of talents for Knowledge Outsourcing are extremely high; in addition to the professional knowledge, the professional talents are requested of research experiences in professional technologies, relative

skills, analytic abilities, judgment, and certain decision-making abilities; (4) Using Knowledge Outsourcing as the strategic operation of enterprises in developed countries implementing the industrial transformation, the implementation of R&D outcomes and the simplified design are the premises.

Organizational Culture

Research on Organizational Culture started in 1970s. Chiou et al. (2011) regarded Organizational Culture as a common faith of top managers managing themselves and other staff and dealing with affairs. Such faith was normally invisible, but would greatly impact top managers' thoughts and actions. The definitions, elements, and types of Organizational Culture are briefly introduced to understand the basic concept. From the viewpoint of enterprises, Organizational Culture is similar to corporate culture that they are not strictly differentiated in this study. Corporate culture could be regarded as the cognition of the members to an enterprise and consisted of value, faith, and thought to cope with external environments and internal operation, where value is the core of corporate culture. Lahiri, Kedia & Mukherjee (2012) pointed out the compositions of Organizational Culture, as 1.high-level charisma and leadership, 2.corporate strategies, vision, and business objectives, 3.performance features which a company considered important, 4.how the employees looked at the cooperation standard set by the leader, and 5.interaction among people in the work completion process.

Referring to Zhou & Li (2010), corporate culture is divided into three dimensions in this study: (1) *Bureaucratic Culture*. An organization with such type of corporate culture is normally a hierarchical organization, which presents definite hierarchy of organization and division of authority and responsibility as well as standardized and immobilized work. Such type of culture is often established based on control and power that stable, mature, and cautious enterprises show the type of culture. (2) *Innovative Culture*. Such type of enterprises would confront more complicated and changeably competitive environments, and the work for the employees is full of creativity and risks that employees with entrepreneurial spirits and ambition are likely to succeed. Such type of culture emphasizes the employees' challenge and innovation, respect individual uniqueness, and allows the members taking risks. (3) *Supportive Culture*. The working environment in an organization with such type of corporate culture is open and harmonious and stresses on interpersonal relationship. The organization appears the attitudes of support, trust, encouragement, and openness to the staff that it presents high mutual assistance and cooperation.

Organizational Performance

Organizational Performance could be the input/output ratio in the overall operation and the achievement of goals in an enterprise as well as the satisfaction of each participant in the operation process (Atesci *et al.,* 2010). The implementation of personal performance is the basis of Organizational Performance but does not stands for the performance of the entire organization. In other words, the organizational performance could be naturally implemented, when individuals at different levels in the organization achieve the organizational goals. Boone & Boone (2012) regarded performance as a key indicator in the organizational operation of an enterprise. Chou & Chou (2011) pointed out Organizational Performance as the behaviors related to organizational goals and such behaviors could be measured based on individual contribution to organizational goals. Lee & Choi (2011) considered performance measurement as a major instrument for management control to achieve the goals by effectively measuring the applied resources in the organization.

Generally speaking, a lot of enterprise managers and experts indicated that performance evaluation indicators were based on the financial performance measure of operating revenue, profitability, and the promotion of productive efficiency (Weerawardena, & Mavondo, 2011). The purpose of performance evaluation was also generally considered as the reference of year-end performance evaluation for bonus that it could not cover the performance evaluation of the entire organization (Parker, 2011). Non-profit organizations presented the performance, the staff capability reflecting the internal management procedure of the organization, and the achievement of goals with Feedback (Supic *et al.,* 2010). Consequently, the performance measurement dimensions of Internal Process and Learning & Development in the balanced score card are utilized as the organizational performance measurement indicators in this study.

Hypothesis derivation

Camisón & López (2011) revealed that Knowledge Outsourcing changing from low-end outsourcing of value chain to high-end information consulting and R&D project increased the market demands for Knowledge Outsourcing and generated new Knowledge Outsourcing markets and corporate culture changes. Meanwhile, Knowledge Outsourcing also formed the markets for financial management, data management, human resource management, engineering design, analog service, distance education, biotechnology, and medicine R&D. Through such an effective route of outsourcing to establish competitiveness, Kang *et al.* (2012) further integrated and utilized the best external knowledge resources to reduce costs, enhance efficiency, thoroughly develop core competence, and reinforce the rapid adaptability to environments. The most competitive internal resources and the best external resources are combined with Knowledge Outsourcing to generate great

synergy effects. An enterprise practicing globalization Knowledge Outsourcing implemented the regional business shift, multilevel flat organizational structure adjustment, and changes of Organizational Culture and presented larger flexibility and adaptability. Lin *et al.* (2011) indicated that an enterprise with Organizational Culture of concern, support, and innovation could better cohere with the common sense in the organization to help the reform and learning and further enhance the overall organizational performance. Prakash & Ofstedal (2010) mentioned that organizational performance depended on the activeness to culture and the share of powerful value that the performance would be enhanced when the ideal faith of cultural value being consistent with the employees.

The following hypotheses are therefore proposed in this study.

H1: Knowledge Outsourcing presents significantly negative correlations with Organizational Culture.

H2: Organizational Culture shows remarkably negative correlations with Organizational Performance.

H3: Knowledge Outsourcing reveals notably positive correlations with Organizational Performance.

H4: Organizational Culture appears mediating effects on the correlations between Knowledge Outsourcing and Organizational Performance.

Conceptual framework

Summing up the above literature review, the conceptual framework (Figure 1) is drafted to discuss the correlations between Knowledge Outsourcing, Organizational Culture and Organizational Performance.

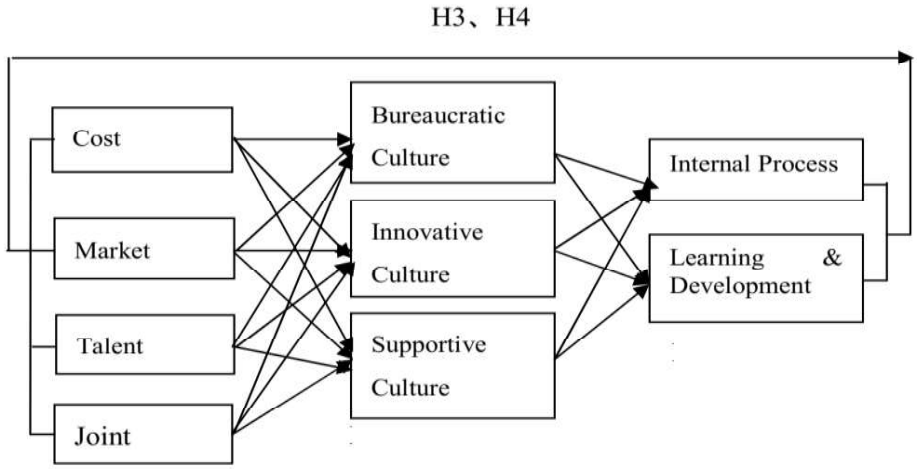

Figure 1: Conceptual framework

Methodology

Research subject

Bureaus and departments in Tainan City Government, including Civil Affairs Bureau, Education Bureau, Economic Development Bureau, Tourism Bureau, Urban Development Bureau, Public Works Bureau, Social Affairs Bureau, Labor Bureau, Department of Health, Environmental Protection Bureau, Bureau of Cultural Affairs, Research, Development and Evaluation Commission, Department of Budget, and Accounting and Statistic, are sampled in this study. Knowledge Outsourcing is often preceded in Tainan City Government for enhancing the municipal construction. Since December 1996, *Global Views Monthly* has conducted the longest and most authorized poll on the satisfaction of administrative implementations of magistrates and mayors. The latest 2013 Poll on Satisfaction of Administrative Implementations of 22 Magistrates and Mayors showed that Tainan City was awarded five stars for two successive years, except the 4.5 stars for the administration, and the satisfaction of the citizens reached up to 95.8%. Tainan City Government therefore is selected for this study. The directors and administrators of the bureaus and departments in Tainan City Government are distributed 260 copies of questionnaires. After deducting invalid and incomplete ones, 146 copies are effectively responded, with the effective response rate 56%.

Analysis

Regression Analysis is applied to understanding the correlations between Knowledge Outsourcing, Organizational Culture and Organizational Performance.

Results and discussion

Factor Analysis of Knowledge Outsourcing

With Factor Analysis, Knowledge Outsourcing was extracted four factors of Cost (eigenvalue=2.763, α=0.81), Market (eigenvalue=2.451, α=0.80), Talent (eigenvalue=1.638, α=0.85) and Joint (eigenvalue=1.527, α=0.86). The covariance explained achieved 73.551%.

With Factor Analysis, Organizational Culture was extracted three factors of Bureaucratic Culture (eigenvalue=2.216, α=0.88), Innovative Culture (eigenvalue=1.983, α=0.84), and Supportive Culture (eigenvalue=1.739, α=0.83). The covariance explained reached 75.493%.

With Factor Analysis, Knowledge Outsourcing was extracted two factors of Internal Process (eigenvalue=2.031, α=0.87) and Learning & Development (eigenvalue=1.838, α=0.82). the covariance explained achieved 80.250%.

Correlation Analysis of Knowledge Outsourcing and Organizational Culture

Multiple Regression Analysis was applied to testing the hypotheses and theoretical framework. The first regression analysis results are shown in *Table 1*. The regressive equation reached the significance ($F=17.648$, $p<0.001$), revealing the remarkable effects of Knowledge Outsourcing on Bureaucratic Culture, where Cost, Market, Talent, and Joint in Knowledge Outsourcing appeared notably positive effects on Bureaucratic Culture in Organizational Culture ($\beta=2.136$, $p<0.01$; $\beta=1.755$, $p<0.05$; $\beta=1.823$, $p<0.05$; $\beta=1.697$, $p<0.05$).

The second regression analysis results are presented in *Table 1*. The regressive equation achieved the significance ($F=25.689$, $p<0.001$), showing the significant effects of Knowledge Outsourcing on Innovative Culture, where Cost, Market, Talent, and Joint in Knowledge Outsourcing presented remarkably positive effects on Innovative Culture in Organizational Culture ($\beta=1.642$, $p<0.05$; $\beta=2.267$, $p<0.01$; $\beta=1.959$, $p<0.05$; $\beta=1.894$, $p<0.05$).

The third regression analysis results are listed in *Table 1*. The regressive equation reached the significance ($F=34.287$, $p<0.001$), revealing the notable effects of Supportive Culture in Knowledge Outsourcing, where Cost, Market, Talent, and Joint in Knowledge Outsourcing appeared notably positive effects on Supportive Culture in Organizational Culture ($\beta=1.725$, $p<0.05$; $\beta=1.917$, $p<0.05$; $\beta=2.197$, $p<0.01$; $\beta=2.046$, $p<0.01$). H1 therefore was supported.

Table 1. Regression Analysis of Knowledge Outsourcing and Organizational Culture

Dependent variable→	Organizational Culture					
Independent variable↓	Bureaucratic Culture		Innovative Culture		Supportive Culture	
Knowledge Outsourcing	β	ρ	β	ρ	β	ρ
Cost	2.136**	0.000	1.642*	0.041	1.725*	0.028
Market	1.755*	0.025	2.267**	0.000	1.917*	0.015
Talent	1.823*	0.016	1.959*	0.013	2.197**	0.000
Joint	1.697*	0.037	1.894*	0.014	2.046**	0.003
F	17.648		25.689		34.287	
P	0.000***		0.000***		0.000***	

R2	0.187	0.235	0.294
Adjusted R2	0.026	0.033	0.041

*Note: * stands for p<0.05, ** for p<0.01, *** for p<0.001.*

Correlation Analysis of Knowledge Outsourcing and Organizational Culture towards Organizational Performance

Multiple Regression Analysis was used for testing the hypotheses and theoretical framework. The first regression analysis results are shown in Table 2. The regressive equation reached the significance ($F=21.674$, $p<0.001$), presenting the significant effects of Knowledge Outsourcing on Internal Process, where Cost, Market, Talent, and Joint in Knowledge Outsourcing revealed notably positive effects on Internal Process ($\beta=1.632$, $p<0.05$; $\beta=1.756$, $p<0.05$; $\beta=2.251$, $p<0.01$; $\beta=2.173$, $p<0.01$). The third regression analysis results are listed in Table 2. The regressive equation achieved the significance ($F=25.176$, $p<0.001$), appearing the remarkable effects of Knowledge Outsourcing on Learning & Development, where Cost, Market, Talent, and Joint in Knowledge Outsourcing revealed significantly positive effects on Learning & Development ($\beta=1.963$, $p<0.05$; $\beta=2.015$, $p<0.01$; $\beta=2.367$, $p<0.01$; $\beta=2.273$, $p<0.01$). H3 was therefore supported.

The second regression analysis results are shown in Table 2. The regressive equation reached the significance ($F=28.397$, $p<0.001$), presenting the notable effects of Organizational Culture on Internal Process, where Bureaucratic Culture, Innovative Culture, and Supportive Culture in Organizational Culture appeared remarkably positive effects on Internal Process ($\beta=2.096$, $p<0.01$; $\beta=2.241$, $p<0.01$; $\beta=2.194$, $p<0.01$). The fourth regression analysis results are presented in Table 2. The regressive equation reached the significance ($F=34.843$, $p<0.001$), revealing the remarkable effects of Organizational Culture on Learning & Development, where Bureaucratic Culture, Innovative Culture, and Supportive Culture in Organizational Culture showed significantly positive effects on Learning & Development ($\beta=2.135$, $p<0.01$; $\beta=2.314$, $p<0.01$; $\beta=2.257$, $p<0.01$). H2 was therefore supported.

Table 2: Regression Analysis of Knowledge Outsourcing and Organizational Culture

Dependent variable→	Organizational Performance							
Independent variable↓	Internal Process				Learning & Development			
Knowledge Outsourcing	β	ρ	β	ρ	β	ρ	β	ρ
Cost	1.632*	0.038			1.963*	0.012		
Market	1.756*	0.027			2.015**	0.007		
Talent	2.251**	0.000			2.367**	0.000		
Joint	2.173**	0.000			2.273**	0.000		
Organizational Culture								
Bureaucratic Culture			2.096**	0.000			2.135**	0.000
Innovative Culture			2.241**	0.000			2.314**	0.000
Supportive Culture			2.194**	0.000			2.257**	0.000
F	21.674		28.397		25.176		34.843	
P	0.000***		0.000***		0.000***		0.000***	
R2	0.237		0.325		0.284		0.339	
Adjusted R2	0.024		0.038		0.029		0.041	

*Note: * stands for p<0.05, ** for p<0.01, *** for p<0.001.*

Mediating effects of Knowledge Outsourcing and Organizational Culture on Organizational Performance

The mediating effects of Organizational Culture were further studied. As shown in the Hierarchical Regression Analysis, Table 3, Knowledge Outsourcing presented remarkable explanation on Internal Process ($F=31.768$, $p<0.001$). According to Model 2 to consider the effects of Knowledge Outsourcing and Organizational Culture on Internal Process, the mediating effects of Organizational Culture were discussed. It was found that β of Cost dropped notably from 1.632 ($p<.05$) down to 1.545 ($p<.05$), revealing that Organizational Culture would reduce the direct effects of Cost on Internal Process; β of Market notably dropped from 1.756 ($p<.05$) down to 1.627 ($p<.05$), presenting that Organizational Culture would reduce the direct effects of Market on Internal Process; β of Talent significantly dropped from 2.251 ($p<.001$) down to 2.038 ($p<.01$), showing that Organizational Culture would reduce the direct effects of Talent on Internal Process; and, β of Joint notably dropped from 2.173 ($p<.001$) down to 2.011 ($p<.01$), presenting that Organizational Culture would reduce the direct effects of Talent on Internal Process. The research results showed the partially mediating effects of Organizational Culture on the correlations between Knowledge Outsourcing and Internal Process.

Knowledge Outsourcing appeared the remarkable explanation on Learning & Development ($F=38.557$, $p<0.001$). Based on Model 2 to consider the effects of Knowledge Outsourcing and Organizational Culture on Learning & Development, the mediating effects of Organizational Culture were discussed. It was found that β of Cost notably dropped from 1.963 ($p<.05$) down to 1.861 ($p<.05$), showing that Organizational Culture would reduce the direct effects of Cost on Learning & Development; β of Market notably dropped from 2.015 ($p<.01$) down to 1.944($p<.05$), revealing that Organizational Culture would reduce the direct effects of Market on Learning & Development; β of Talent significantly dropped from 2.367 ($p<.001$) down to 2.162 ($p<.01$), presenting that Organizational Culture would reduce the direct effects of Talent on Learning & Development; and, β of Joint remarkably dropped from 2.273($p<.001$) down to 2.071 ($p<.01$), showing that Organizational Culture would reduce the direct effects of Talent on Learning & Development. The research results appeared the partially mediating effects of Organizational Culture on the correlations between Knowledge Outsourcing and Learning & Development that H4 was supported.

Table 3. Hierarchical regression of Knowledge Outsourcing and Organizational Culture towards Organizational Performance

Dependent variable→	Organizational Performance							
	Internal Process				Learning & Development			
Independent variable↓	Model 1		Model 2		Model 1		Model 2	
Knowledge Outsourcing	β	ρ	β	ρ	β	ρ	β	ρ
Cost	1.632*	0.038	1.545*	0.047	1.963*	0.012	1.861*	0.021
Market	1.756*	0.027	1.627*	0.041	2.015**	0.007	1.944*	0.014
Talent	2.251**	0.000	2.038**	0.002	2.367**	0.000	2.162**	0.000
Joint	2.173**	0.000	2.011**	0.008	2.273**	0.000	2.071**	0.006
Organizational Culture								
Bureaucratic Culture			2.162**	0.000			2.291**	0.000
Innovative Culture			2.375**	0.000			2.427**	0.000
Supportive Culture			2.243**	0.000			2.351**	0.000
F	21.674		31.768		25.176		38.557	
P	0.000***		0.000***		0.000***		0.000***	
R2	0.237		0.346		0.284		0.415	
Adjusted R2	0.024		0.037		0.029		0.042	

*Note: * stands for p<0.05, ** for p<0.01, *** for p<0.001.*

Conclusion

From the research results, Knowledge Outsourcing would obviously affect Organizational Culture and Organizational Performance. Apparently, Knowledge Outsourcing not only could reduce costs and enhance efficiency for benefits but could also precede non-core technical shift through outsourcing for public sectors. The reduced transaction costs and enhanced knowledge application value further promote the organizational performance of public sectors on Knowledge Outsourcing. Knowledge Outsourcing of public sectors facilitates the in-flow of knowledge resources and optimal allocation, promotes knowledge, technology, and information share, and becomes a key factor in the organizational culture structuring and the rapid increase of organizational performance. Knowledge Outsourcing on the high-end of public sectors presents diversified features. Along the branches of knowledge, technology, and management value chain, Knowledge Outsourcing influences various links, processes, functions, and classification in public sectors, including research and development, management consulting, information and communication service, human resource management, vocational service, legislation (including intellectual property rights related affairs), accounting, financial management, and marketing. As a result, Knowledge Outsourcing of public sectors, based on knowledge share and link, would deeply affect the organizational culture and performance

Suggestion

Aiming at the research results of Knowledge Outsourcing, Organizational Culture, and Organizational Performance of public sectors, the following suggestions are proposed in this study.

– *Reinforce the principles of Knowledge Outsourcing of political leaders*. When promoting Knowledge Outsourcing policies in public sectors, sufficient budgets should be prepared for the in-depth research from academic institutes or experts, who could assist in collecting data, developing the function of consulting, and providing objective choices with highly feasible Knowledge Outsourcing items for public sectors enhancing the effectiveness.

– *Plan professional training for Knowledge Outsourcing*. For Talents, Knowledge Outsourcing of public sectors is an administrative contract, which involves in administrative legislation and management strategies, rights in contracts, obligation of manufacturers, margin money for appointment, pricing of rental and royalty, charged items and standards for clients, and open bidding or accreditation. With the short experiences in the practice, the administrators of governmental institutes are scared of contracting outsourcing to avoid illegal behaviors when signing outsourcing contracts. For this reason, regular professional training for talents need to be planned, and the ones completing the training should be listed as the human resources.

– *Collect Knowledge Outsourcing cases of public sectors and establish assessment systems*. Favorable cases of domestic and international public sectors promoting Knowledge Outsourcing are broadly collected, and such cases should represent distinct properties to be made the case collections as the educational training materials and the reference of different institutions. Special promotion organizations cross bureaus and departments could invite relative organizations and civil experts, researchers, and representatives of public opinions to establish temporary task groups for inspecting the overall promotion plan, providing guidance, and assisting in ensuring the direction so as to prevent the institutions, which explore on their own, from coordination failure.

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